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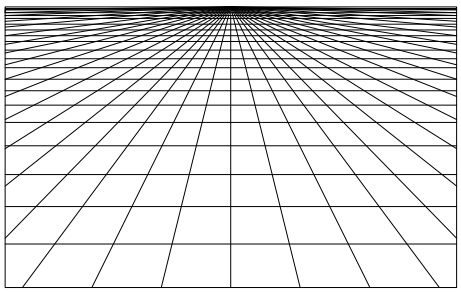

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Monsters in Mind

A Case Study On Turkish Resistance Against Genetically Modified Organisms

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Social and Environmental Impact of Biotechnology
2004/2005

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Abstract

This case study on Turkish resistance against Genetically Modified Organisms (GMOs) is conducted by using the Social Construction of Technology (SCOT) theory in order to illuminate the less included actors in the development process of Turkish biotechnology capacity building.

Promise and fear is the twin aspect of new biotechnologies. The level of risk perceived with the introduction of every new technological change, is depending upon the values, beliefs and cultures that are guiding the multiple cosmologies, or systems that provides signification, in every human society. The global controversy over Genetically Modified Organisms (GMOs), a battle over the creation of wealth and distribution of public goods, and over ethical considerations, is expressed in various local contexts.

Turkey is in this sense not unique. However, this social anthropological case study on the Turkish civil society's engagement in the controversies over GMOs shows how local efforts do create an impact on decision making at higher structural levels as well as creating awareness among the broader public.

A greater level of public participation may create positive opening around knowledge asymmetries and political influence and thus face human needs in a more socially balanced manner.

Key words

Agricultural (food) biotechnology, Genetically Modified Organisms, Monster tomato, values, bioethics, civil society, social constructivism, risk, public good, scientific controversies

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Any errors, omissions and inadequacies made, rest totally upon my responsibility.

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Introduction and aim of the study

The republic of Turkey is a huge country with rich and complex traditions and legacies coloured by both Asia and Europe. Still today it is betwixt and between those two continents encompassing notions of both. Geographically speaking Turkey resides in both Europe and the biggest part of the country, *Anadoulu* (Anatolia), in the Near East. Europeans tend to forget that Turkey, with their history of three empires has been a part of European history for at least six centuries.

According to the countries socio-economic level of development it is still characterised as a development country, being rated as number 94 on the United Nations Human Development Index (UN HDI) of 2005. However, being admitted to negotiations over a possible European Union (EU) membership, which will start in October, as well as the strategic geo-politic situation places Turkey in another position than the other developing countries. There is intense lobbyism going on and efforts made for harmonising Turkeys legislations with EU, and this reflects the policies also for the biotechnological sector.

Even though the country is trying to build up its biotechnological capacities in line with achieving a viable knowledge economy, or even a *bioeconomy*, the great majority of Turkey's population still depends on conventional agriculture for living. As the new technologies are more likely to favour and include rather large-scale farming or company interests than small-scale farmers, controversies are assumingly obliged to take place.

Both new technologies and EU harmonisation may create huge impacts in rural societies, to a degree where conventional, small-scale or ecologic farming as an option is endangered, and thus impose a wave of migrations to the big cities for wage labour. This is one fear held by some parts of the Turkish civil society.

I want to follow up a remark by a former ESST-student Eva Dobos (2002). She stated it would be interesting to study the role of the Turkish civil society in a context of biotechnologies. She created a picture of Turkish biotechnological capacity building, also discovering the gaps between the different actors that were to a lesser or greater extent included or excluded. In this regard she identified the *strong* and the *weak* actors and also the lack of a network both within and between the actors.

I will specifically look on the aims, work and outreach of the quite recently created NO to GMOs Platform that is a part of Turkish civil society. Why do some actors perceive genetically modified organisms as dangerous even the safety and substantial equivalence from their original counterpart has been proven? The perceptions divert among the different actors. In this thesis it is not a question of finding who is right or wrong but more about how they are defending and transmitting their views by looking on the ways they act. It is especially the informed segment of the civil society that interests me.

The Social Construction of Technology (SCOT) theory argues that some low-included actors might see a new technology as a “take it or leave it” choice. This theory also claims to provide possibilities for illuminating the views of the weaker actors that are excluded from both defining and regulating the technology, as well as it is distinguishing between human and non-human

actors, on the contrary to Bruno Latour's Acteur-Network theory (ANT). SCOT may in turn reveal power constellations to a greater extent than with the ANT theory.

The question I am asking is how the different human actors' opinions take form, what actions and measures are taking place? How and is this affecting the Turkish biotechnology capacity building? How are ethical and security issues related to biotechnology with the consensus of the society being solved, if they are at all? How is the awareness of the Turkish civil society being increased, if it is at all?

This thesis will be a social anthropological study of the GDO'ya Hayır Platformu, the No to GMOs Platform (which I sometimes refer to as the Platform), with related actors, and the controversies over Genetically Modified Organisms and nature that they are or want to be engaged in, with a special focus on power influence.

List of Acronyms

ANT	Actor-Network Theory
BT	Biotechnology
CAP	Common Agricultural Policy (of EU)
CBD	Convention on Biological Diversity
CGIAR	Consultative Group for International Agricultural Research
COMEST	World Commission on the Ethics of Scientific Knowledge and Technology
DNA	Deoxyribonucleic Acid or Deoxyribose Nucleic Acid
Double helix	the usual geometric configuration of a DNA
EU	European Union
FAO	Food and Agriculture Organisation
GDO	Genetiği Değiştirilmiş Organizmalar, GMOs.

GMO	Genetically Modified Organism
HDI	Human Development Index
HDR	Human Development Report (UN)
IMF	International Monetary Fond
IPR	Intellectual Property Rights
LMO	Living Modified Organism
MNCs	Multi National Companies
NGO	non-governmental organisation
OECD	Organisation for Economic Co-operation and Development
PP	Precautionary Principle
PPP	purchasing power parity
R&D	Research and Development
rDNA	Recombinant Deoxyribose Nucleic Acid
SCOT	Social Construction of Technology
TRIPS	Trade-Related Aspects of Intellectual Property Rights
TÜBİTAK	Scientific and Technical Research Council of Turkey
TÜSİAD	Turkish Industrialists' and Businessmen's Association
UN	United Nations
UNDP	United Nation Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UK	United Kingdom
USA	United States of America
WB	World Bank
WTO	World Trade Organisation

1. Turkey in context

In order to understand the controversies over GMOs in Turkey and the knowledge constructions that are being produced by the different actors, especially by the informed part of the civil society, placing Turkey historically, geographically and socially is a necessary basis.

1.1 Non-western or multiple modernities in actions

Turkey has hosted three empires and is also the cradle for one of the first civilisations in the world, arisen by the Euphrates and Tigris. The country hosts a rich biological diversity with many endemic species, and is also endowed with good conditions for farming. Turkey is still dependent on agriculture in several ways. Their rural population is still quite high, one third of Turkey's total population (for the year of 2003, Human Development Report), and this despite constant migration to the big cities, that will further increase if Turkey becomes an EU member. Turkey's agricultural working force is about one third of the total working force, but contributes only limited to the country's GDP, as the other sectors are increasing.

The country still has the characteristics of a developing country, but differ itself from the other developing countries in several aspects, one is because the country is entering negotiations about EU-membership the third of October 2005. In other words, Turkey faces even more challenges and technological changes to come. One technological change is about the introduction of Genetically Modified Organisms (GMOs), the development and adjustment of biotechnological sector, and also the need for more informed public so as they may actively participate in debates.

The controversies that arise along with important technological changes, especially in the sphere of biotechnologies, agriculture and environment, are influenced by different socio-cultural worlds, which are shaped by the knowledge and values people have. Development is linked (or at least was) to the idea of (social and economic) progress. The idea of progress is inherent in the myth of modernity that sprung out of the industrialisation era in the West (here understood as the richer, more developed or industrialised countries, "countries in the North"). The efforts made in Turkey in order to be *a pair* with Europe may have a scent of progress, in the evolutionary sense of the term/myth.

After Mustafa Kemal's (better known as Atatürk, the "father of Türks") proclamation of the Turkish Republic the 29th of October1923, Turkey started its modernisation period, looking over to Europe, and especially to France. The concept of an État laïque, a secular state, was thought of as a prerequisite, followed up by a range of modernisation reforms. This cultural revolution conducted by Atatürk and his adherents, the Kemalists, surely made impacts on the society a whole, but maybe less visible in the countryside. For instance, changing the alphabet from Arabic letters to Latin letters in 1928, forced generations to switch their way of writing, and made the next generations having problems with reading historical sources. The changes that Turkey is faced with today are far more demanding to overcome for the rural population, rather than for the urban one.

The spirit of "Westernisation" is still sensible by living, especially, in Istanbul with the young Turkish population's eagerness to manage the symbols of the West by appropriating the "Western way" of being, speaking and thinking. I describe the "Western way" as the acquisition of symbols and performance of actions reflecting a high material living standard, helped from the

workings of capitalism and maybe dictated by the "want-makers" (in other words dictated by the advertisement business).

Along with such subjective observations of efforts to "Westernise", Turkey is a country that may be argued to also host processes of non-Western modernities, or what Nilüfer Göle calls an "*indigenisation* [processes] *of modernity*" (Göle in Arts 1999:41) this may also be expressed in the word '*glocalisation*', local experiences of global traits. Science and technology are indeed strongly persuading and characterising the modern Western culture, then how are the efforts of seemingly westernisation being perceived by different Turkish social groups?

Along with the GDO'ya Hayır's fear of gene pollution with the possible introduction of GMOs in Turkish fields, they also declare when speaking with them, that they are against entering the EU. If their work and opposition also is a fraction of a more general protest against the effects of globalisation is not too easy to claim pig-headed. However, that they are not only in line with those indigenisation processes taking place in Turkey, but might *also* be part of this general opposition to globalisation effects, is not a surprise. Göle (ibid:55) concludes with saying '*that the project of multiple modernities, or non-Western modernities is a search for a positive answer to the tensions between identity, difference and the converging forces of modernity*'. The GDO'ya Hayır Platformu should contribute to a more engaging and constructive dialogue with the different actors around the controversies over GMOs and Turkish agriculture if they are a part of this process. They are certainly under way of achieving this as well as making an impact.

1.1. Socio-economic conditions

Turkey's geopolitical situation is quite special. It is a development country, but negotiating for EU-member ship, and lies strategically "between" Europe and the Middle-East.

Turkey has great socio-economic challenges to counter, facing a huge young population, as much as 30% are under 15 (2003) and the total fertility rate (births per woman) for 2000-05 is 2.5. The Turkish society is characterised by great dynamics in several ways, culturally, socially, economically and also when it comes to values. The development process in will speed accordingly quick, and this demands wise policymaking in many domains.

The Human Development Index (HDI) provided by the United Nations Development Programme (UNDP) situates Turkey in the medium-developed category by, ranked as 94th (out of 177 countries) in the 2005 Human Development Report (HDR). This is the worst performance of the southern European countries, but among the better ones of the developing countries. The HDI measures human development by three dimensions that consider life expectancy, school enrolment and literacy, and income. While on the Human Poverty Index (HPI) which focuses on the human poverty in the developing countries, Turkey is ranked as 19th of 103 developing countries.

As much as one third of Turkey's population depends on agriculture for living, and it is thus the most important industry in the country. However, the share of agricultural activity reflected in the GDP is decreasing (TÜSİAD 2001:18). There are two ways of measuring GDP, the one recommended for comparing the socio-economic living standard between countries (especially in

developing countries), is reflected in Purchase Power Parity (PPP) rates. This rate is taking into account aspects predominant in developing countries, which are ridden by economic, political and social instability. It shows the purchasing power of a country's currency by '*the number of units of that currency required to purchase the same basket of goods and services that a U.S. dollar would buy in the United States* '(Todaro and Smith 2003:807).Turkey's GDP per capita (PPP US$) is 6, 78 while Norway's is 37, 7, the countries are hence 75th and 3d on the UN HDR's ranking in this measure. A simple measure of GDP does not however show the income or economic inequalities within a country. The *gini-coefficient* provides a clearer picture of the distribution of wealth, whereas in Turkey this number is relatively high and thus the inequality as well (ibid: 201-203).

This may further increase the gap between the haves and the haves-not when distributing the benefits of new technologies as *social goods*, which is a goal stated in the Human Development Report 2001, *Making Technologies Work for Human Development* (HDR 2001).

Earlier on, the Turkish people depended on the family or the centralised, and to a certain measure authoritarian, Ottoman Empire to provide them more or less with what they needed. This functioned as a social security system. Today, according to Ayşe Buğra (2003:467) '*neither the state nor the family, as two pillars of the socioeconomic order characterized by these arrangements, is now able to carry the burden of leading the society through its current market-orientated transformation*'. Turkey started it market orientation in the 1980's, reflected by the changes brought into the five-year plans opening up their national market more than ever.

Buğra's statement might reflect the worries carried by the GDO'ya Hayır Platformu members

about the possible introduction of GMOs in Turkey, as well as entering the EU, with all the reforms and harmonisations the Turkish society undergoes, and has to further implement, in this case. An increased migration from rural to urban areas will be expected as well as increasing intensification of capital in the western parts of Turkey, which today is already richer than the eastern parts, due to geographical as well as industrial reasons. The fears held by amongst other, the GDO'ya Hayır Platformu, might prove to be valid. Their awareness and attempts on passing on their view on and knowledge about GMOs to the Turkish civil society is desirable for several reasons. One is for creating a better informed public.

1.2. Civil society

Serif Mardin mentions an aspect of the Ottoman-Turkish society that is "*the absence of what some thinkers of the Enlightenment would have called 'civil society'* "(1969:258). This might still be the case today, as some scientist respondents argued that there is a relatively low awareness in public matters, in the case of adoption of GMOs, among the general public.

Turkey does not have the same tradition or history of strong trade unions like Europe has, according to one of the informants, and also supported by historical sources. This might give a different point of departure regarding the role and power of the Turkish civil society from the European ones. This is also confirmed by the historical arguments Mardin is putting forward that '*all Ottoman citizens stood in a 'direct' rather than a mediated relationship to the supreme authority*' (ibid). This pictures the lack of what he earlier in the article claims could be called '*civil society*'. Further, he states that in this regard, '*it could be expected that Turkey would encounter difficulties in the practice of modern democracy to the extent that the latter depends on*

this missing link, as also in taking over concepts of politics which had been built on a different, social foundation' than Europe. If we take into account the contemporary Turkish reality, with the somehow *'Asiatic Mode of Production*' syncretism with the '*European Mode of Production*' may this still hold to be true?

Today the Turkish civil society is characterised by a young and aspiring population. The percentage of population under 15 (% of total) was for 1993 almost 30%, and is predicted to 25% in 2015, which shows that it continues to grow, and faster than anywhere else in Europe as the fertility rate is keeping steady on a high level. The dynamics taking place in Turkey, and especially visible in Istanbul and other big cities, will create big differences and opportunities in the future. Meltem Ahıska postulates that the idea of *speed* emphasised in the Westernisation/modernisation *encapsulates energies* and holds up a *barrier for using these energies in dealing with frozen identities and problematics* due to the fear of being late, referring to the eagerness of catching up with the West (2003: 369). Economically speaking, there are advantages in being a '*latecomer*' attempting to '*catch up* ', with buying*, licensing or importing biotechnologies rather than 'reinventing the wheel'* (Brenner p.14). Ahiska argues thereafter that this idea of speed with its encapsulated energies hinders a '*critical and creative thinking that could have attended to the questions of the present*' (2003: 369).

The GDO'ya Hayir Platformu might be said to have caught this awareness. As one respondent said '*we are all against European Union in this chamber*', they may have noticed some of the other Turkish social groups' eagerness to enter the EU, maybe blinded by the promises of prosperity, and hence making them unable to see the socio-economical and environmental impacts of entering the EU, or in this thesis case; seeing the impacts of a weak law on or an

adoption of GMOs. However, there are different socio-economic impacts for both entering and not entering.

Serif Mardin continues by putting forward (1969:279) that as '*all Ottoman citizens stood in a 'direct' rather than a mediated relationship to the supreme authority*' it pictures the gap or lack of what he earlier in the article claims could be called '*civil society*'. Further he states that in this regard, '*it could be expected that Turkey would encounter difficulties in the practice of modern democracy to the extent that the latter depends on this missing link, as also in taking over concepts of politics which had been built on a different, social foundation*' than Europe. Today, taking into account the *Turkish reality*, *that of the 'Asiatic Mode of Production'*, would imply that the historical Turkish social structure still contributes to maintain *elitism as the prevailing world view of the educated* and thus keeps the *civil society* on an arm-lengths distance from being legitimate contributors in Turkish politics (Mardin 1969:280-81).

The big differences in the Turkish society when it comes to culture, values and socio-economic conditions, still exist and are especially vivid in a big city like Istanbul. The people engaged in the GDO'ya Hayır Platformu are mostly from the well educated strata of the Turkish society. They have the capacities to engage despite limited resources, and they are so doing due to different reasons. Still, the GDO'ya Hayır Platformu might be seen as an essential group in forming future attitudes regarding a biotechnological product, such as GM food, as they perceive themselves to be speaking on behalf of not only future generations, but also on behalf of farmers, consumers and other relatively "*week*" groups in the society when it comes to exercise political influence.

They have genuine interest in making an impact on the wider Turkish civil society as well as Turkish policymakers. Their efforts are on line with the rural society (especially small-scale and organic farmers), which currently might be seen as the less advantaged in a Turkish EU harmonisation setting. It is thus general consensus in research related to EU accession that '*the biggest adjustment would be asked of the most vulnerable in the population*' (Oskam, Burrell, Temel, van Berkum, Longworth, Vílchez 2004:88). This is because they are the ones with most at stake, as they are living in the vulnerable, which is mostly rural, areas with predominance of low literacy level, and a particular age structure, also inhabited with many young people (ibid). An EU enlargement with Turkey entering, would imply that *new and far better strategies than EU have experienced with the former east-European countries* (ibid) are required for a successful adhesion. The EU, as well as the Organisation for Economic Cooperation and Development (OECD) countries, is paving a path structured by a knowledge based economy, and thus strongly focused on new or biotechnologies as a viable industry in the liberal market economy. Biotechnologies will hereby be defined.

2. Biotechnologies

When splitting up the word *biotechnology,* '*bio*' may refer to biological system or process, while '*technology*' is according to Hylland-Eriksen (1998:273) '*the systematically, acquired skills and human made material remedies that humans process and use in their transformation of nature'* while Tim Ingold, another social anthropologist have defined it as' *a corpus of culturally transferred knowledge, that is expressed in manufacture and use*' (ibid).

Hence, *biotechnology* is defined in the UN's Convention on Biological Diversity (CBD) as *'any technological application that uses biological systems, living organisms, or derivates thereof, to make or modify products or processes for specific use*"

Another similar definition of biotechnology, defined by the OECD is; '*The application of science and technology to living organisms, as well as parts, products and models thereof, to alter living or non-living materials for the production of knowledge, goods and services*' (2004:3). In other words every technology that uses micro organisms, plants- and animal cells or parts of these in order to present or modify products is biotechnology. Vandana Shiva (1993), calls biotechnology "*genetic engineering*" as it is a direct manipulation of the DNA (the hereditary material). This modern genetic engineering skips the natural order of evolution by '*the direct intervention on the genetic make-up of an organism by introducing foreign DNA into its gene pool by means that would not occur naturally*' (Karaali 2002:111). Vandana Shiva, accompanied by others as well, is a devoted critic in questions about Genetically Modified Organisms (GMOs), with the best in mind for the sake of developing countries.

Just by splitting up the word 'biotechnology', we see that this is about a human interference in nature and lives.

It clear that Watson and Crick's discovery of the double helix structure of the DNA, and thus the possibility for identifying genes and their workings, paved the way for new scientific and technological developments in genetic engineering. The advances made are called '*the second biotechnological revolution*' (or '*the new biotechnology*'), after Pasteur's immunisation treatment from the 1880's being the first one (Pereira in Salomon, Sagasti and Sachs-Jeantet 1994:467), and proves a whole new era of commercialisation possibilities by the transformations of biological materials. Critics like Jeremy Rifkin (in *The Biotech Century*) calls it a '*third industrial revolution*', but argues strongly how this revolution will *harness the gene and remake the world* for the benefit of some strong actors, and for the sorrow of human kind. Rifkin raises his voice for illuminating the possible risks and consequences with the fast developments in biotechnologies.

Even though these new technologies, related to the agricultural domain that this thesis focuses on, are promising for *increasing yields*, *transferring germ plasm quicker* that would *broaden the genetic diversity*, *eliminating undesirable characteristics*, producing *new plants*, finding more efficient means of *combating pests* and diseases, making *long-term storage viable*, *economising the use of land* that would further give *room for redistribution of land to small-scale farmers*, and for creating *new organisms more suitable for natural environments* (Pereira's table in Salomon, Sagasti and Sachs-Jeantet 19994:477), there are scaring back draws and risks to consider. However, the adoption of all new technologies comes with a potential risks.

The risks related with the introduction and application of GMOs is highly connoted to uncertainty about the negative (long term) outcomes of using GMOs. Especially environmental groups, like several of the NGOs in the GDO'ya Hayır Platformu, are more prone '*to emphasise catastrophic risk and long-term consequences*' (Turner and Wynne 1992:120). Some risks are for example a possible *increase in uniformity* as only commercially viable organisms are likely to be manufactured. This may in turn increase the *vulnerability of the genetic diversity*, and create *ignorance of local conditions/*problems, and create *overproduction* that will make the *market instable.* A *global overproduction that creates depressed economies unable to take advantage of potential benefits* will likely occur, and also disturbing the *balance of nature through the release of genetically altered micro-organisms* is feared to happen(Pereira in in Salomon, Sagasti and Sachs-Jeantet 19994:477).

To summarise it as Pereira (ibid) does, it is clear that '*the opportunities offered by biotechnology to developing countries should therefore be weighed against its environmental risks and the interrelated social and economic implications*'. However, risks are perceived differently depending on the cosmologies and social structures humans are a part of. According to Mary Douglas' and Aaron Wildavsky's Cultural Theory of Risk (1982), peoples attitudes depends on the individuals' positioning in society and the how their choices are derived from this, as well as the degree of solidarity between members of different social groups. Risks are therefore perceived differently.

When the definition OECD uses stresses that biotechnologies are applied for the sake of production of goods, allegedly for the benefit of the public, thus *social* goods, it may look like a

concern for the distribution of wealth and the creation of public goods are seen as the ultimate goal with the application of biotechnologies. A concern that arises with producing "*social goods*" is to ask what these social goods are. According to Frey (in *The Social Science Encyclopedia* 1996:701-2) '*public goods are characterised by non-excludability (individuals are not paying for the good cannot be excluded) and by non-rivalry in consumption (that is, it does not cost anything when, in addition, other persons consume the good).* He continues further on telling that '*the supply of a public good is Pareto-optimal (efficient) if the sum of the marginal willingness to pay) of the persons benefiting equals the marginal cost of supply. This efficiency condition differs from the one of the polar opposite, private goods, where marginal utility has to equal marginal cost of supply*'. Everyone may potentially benefit from the provision of public goods, the problem goes in who gets to define and supply and who finance the public goods.

In a country where the inequalities are huge, shown by a high number on the Gini-coefficient, *social* or *public goods* seem to be not equally available for all citizens. This might be due to different understandings of what a social good is and who it is that carries out the identification of needs and the provision and application of services. The adoption of biotechnologies might therefore worsen income distribution in developing countries, which have weak public structures and weak economic, industrial and human capacity for both conducting R&D and providing social goods in a just manner.

Since biotechnologies are so strongly linked with knowledge, and thus culture, the way these technologies and their products are perceived varies within a society, within a culture. Shiva (in Moser and Shiva 1995:194) says that '*systems of knowledge and culture provide the framework for the perception and utilization of natural resources*'. The benefit shearing derived from

biotechnological end-products is not, yet, equally distributed between and among cultures and societies.

2.1 As culture

Biotechnologies are as we saw highly knowledge depended. They require a high level of complex Research and Development (R&D), and thus high investments, and are therefore a part of a '*culture*', which is defined as '*the system of common understandings and ways of behaviour that actors have acquired as members of a society*' (Hylland-Eriksen 1998:110).

Biotechnology has like every other technology a two-sided character according to Øyhus; '*it has a practical side, i.e. it is a tool (a 'hardware'); and it has a cognitive side, i.e., it is a corpus of knowledge (a 'software')*' (Øyhus 2000:1) that is thus constituting for its identity and symbolic power. As biotechnologies are depending on knowledge, they may also be seen as a part of a greater symbolic whole, embedded in a *culture* (Ingold, T., in Øyhus 2000:1). *Culture* is also broadly referred to as '*the socially inherited body of learning characteristics of human societies*' (D'Andrade in *The Social Science Encyclopedia* 1996:161). As long as this new technology is a part of a culture, it may be perceived differently than the actors that are less included in the definition and development of the technology, not sharing the formal and tacit knowledge biotechnologies are depended upon. In other words, the *culture* of biotechnologies consists of '*belief systems* [that] *are regarded as tacit expressions of dominant social values, and in which belief about nature are structured so as to reinforce dominant social structures as if they were natural and inevitable*' (Turner and Wynne 1992: 119). It is the possibility of reinforced inequalities as negative effects social movements around the world are fearing with the

commercialisation of biological material, that are seen as revolutionary for creating a *bio based economy*. Biotechnologies and social institutions, '*the perceptions, practices, and rules that govern the relations and interactions between individuals and groups* 'are therefore coevolving (Juma 2005:265).

OECD wish to create a *bio based economy* (2004:3) Biotechnology is thus the pillar that corresponds with activities that are seen as important in the knowledge based economy. As '*a corpus of knowledge,* [bio] *technology is part of a larger symbolic system, a' culture'* (Øyhus 2000:1). If we agree it is, then how does this affect the application and/or transfer of plant biotechnology from its cradle in the firms into public acceptance?

It is exactly this aspect of biotechnologies, GMOs or Living Modified Organisms (LMOs), as symbols for a culture, representing something else or more than just scientifically facts that interests me. The introduction of GMOs in Turkey is not just perceived as a mere technological change. It might also be symbolising the intrusion of another culture, closely linked with globalisation and the free-market orientation. The technological change, like such an adaptation of GMOs in Turkey would be, implies that it conflicts with values.

2.2 Globally

Globally, biological resources are mostly to be found in what we call the developing world, while the technology in processing this material and creating products, biotechnological products, is predominantly an activity pursued by and clustered in wealthy countries or Multi National Companies (MNCs). When R&D on biotechnologies is that highly knowledge intensive, it

demands huge input of resources, and this “leaves” it to mostly well-off enterprises and institutions. Technological innovation is seen upon as the formula for economic transformation, and biotechnologies are highly linked to such research and development (R&D) activities. The commercial potential in these activities drives the innovation, and questions in biotechnology issues are hence demanding a risk/benefit analysis as well as risk management in order to avoid negative social and environmental impacts of GMOs and other biotechnological products deriving from applications of these activities.

As the impacts pass beyond borders, global collaboration is needed. This has resulted in several international environmental instruments, with yet more to come. One is the Convention on Biological Diversity.

2.2.1 Cartagena Protocol on Biosafety

The Convention on Biological Diversity (CBD) is an international treaty resulting from the Earth Summit in Rio de Janeiro in 1992. The treaty has three aims, which is the conservation of biological diversity, with a sustainable and just use of its components, and the fair and equitable sharing of the benefits or goods derived from the worlds genetic resources. The treaty has added the document called the Cartagena Protocol on Biosafety. This is a global effort on controlling the movement of living organisms as it is regulating the handling, transfer and use of biotechnological products, especially stating that the *precautionary principle* (will be explained underneath) is a prerequisite for the application of new technologies. The Cartagena Protocol on Biosafety may hence be seen as a tool for amongst other prevention of environmental and health hazards and this (should) permit developing countries to balance public good or health over

economical benefits (www.biodiv.org).

As the introduction of GMOs is a technological change, the necessity of evaluating the possible consequences of such change, might have a broader field of fire than just within some national borders. It requires accordingly more than merely national instruments for handling such changes. The Cartagena Protocol is in other words about safety matters, that are the consequences of the end product of biotechnologies.

Turkey ratified The Convention on Biological Diversity 14th of February 1997 and the Cartagena Protocol the 24th of January 2004 (http://www.biodiv.org/world/map.asp?ctr=tr), but not without opposition from some prominent Turkish researchers.

2.2.1.1 Bioethics

The convention might be argued to take ethics into consideration, as the convention has requirements of ethical character, such as the *precautionary principle*, which will be explained in more detail.

Ethics is often described as the "*science (study) of morality*", as ethics in Western tradition sometimes is called moral philosophy. *Bioethics*, which is relevant in questions about biotechnologies, concerns the moralities related to actions in science and biology, and involves policy questions. It is about the right and wrong of an action. Whether bioethics also concerns the application of plant biotechnologies in Turkey can be discussed, as philosophers tend to disagree upon the classification of what an (bio) ethical concern is. Generally speaking applied ethics

should apply norms in certain controversial issues (www.wikipedia.org).

The application of plant biotechnologies, GMOs into Turkish fields, is such a controversial issue, as it is about conflicting values. Accordingly, the controversies and scientific debated over the introduction of GMOs in Turkey and implementation of the convention and protocol are thus of bioethical concerns. Some ethical measures that are taken will hence be explained.

2.2.2 The 'Precautionary Principle' and 'Substantially equivalent'

The Cartagena Protocol on biosafety is in line with the "*precautionary principle*". This principle was conceived at the Asilomar Conference in 1975 and it is viewed as an ethical requirement for dealing with new technologies.

The European countries are adherents to the precautionary principle, while the USA find the GM food that is proven to be '*substantially equivalent*', that means that a genetically engineered organism do not differ in substance from its original counterpart, therefore to be sufficiently sound for release on the market. There is in other words a huge gap between the US and European way of perceiving biotechnological products.

Still, it is in the companies interests not to harm people. The concerns that are being expressed are about the long-term effects, which are not yet able to grasp. Such concerns exist partly because the tests conducted about GMOs impact on health and environment still do not show results for a longer time span than 7-10 years.

It is exactly this uncertainty the environmental groups are worried about. The introduction of a new technology always poses a certain risk. Different social groups will perceive this risk in varying degree. Some perceptions divert due to different cosmologies. The word "cosmologies" is describing the ways persons are attributing meaning to their worlds and surroundings. The different goggles everyone is equipped with gives diverting views as a result of different points of departure. Hence risk needs to be negotiated.

That is why United Nations Educational, Scientific and Cultural Organisation's (UNESCO) World Commission on the Ethics of Scientific Knowledge and Technology (COMEST) have gathered philosophers in order to create an ethical platform out of a coherent understanding of the precautionary principle. They believe the precautionary principle may prove a viable guide for policymaking, and thus for enhanced risk management. The precautionary principle is in other words a way of thinking.

2.2.3 Development principle

As the precautionary principle is a way of thinking, it is still perceived in various ways due to different context or cosmologies.

When it comes to biosafety Young (2004:2) states that the concept of '*precaution*' is being conceived differently, as he claims that '*many countries also suggest the existence of a so-called "development principle", which adds a human balance to the precautionary principle*'. This is a stance for a more sustainable development principle in thread with the desires of a lot of grassroots organisations around the world, wishing to pass on a healthy world to next

generations. The GDO'ya Hayır Platformu fight for their right to decide what to grow and thus what to eat, where they see trans gene pollutions from GM crops as a threat to this right. Also the Food and Agricultural Organisation (FAO) of United Nations states it is a Human Right to know what a human being is eating, and they are adherents of labelling of GMO-containing products after a case-by-case approach in deciding whether to allow or not allow the application of GMOs (www.fao.org/biotech/stat.asp).

With the possibility of creating new genetic materials and take patent on it for commercial reasons a new opposition that has never taken place before is created; the opposition between farmer's and breeder's rights. Issues at stake in the prevention or use of GMOs (and GMO containing products) for developing countries, are *patent rights* (Intellectual Property Rights, IPRs), *biosafety*, *trade*, *food safety and consumer choice*, and *research investments* (Boyacioğlu, Nilüfer, Çapanoğlu 2002:3). The struggle over the introduction of biotechnological products in Turkey has thus many issues to handle, with both positive and negative impacts.

2.3. Biotechnologies in Turkey

In Turkey it is the Ministry of Agriculture and Rural Affairs, the General Directorate of Agricultural Research (GDAR) and the Scientific and Technical Research Authority of Turkey that are responsible for biotechnology research in agriculture, while the Ministry of Environment and Forestry is responsible for environmental aspects of biotechnology.

Turkey does not import GM food and there are no labelling regulations declared in Turkey, yet. However field trials have been conducted with the permission of the Research Institutes of

Ministry of Agriculture. These test fields have been of transgenic crops such as corn, potato and cotton (Boyacioğlu, Nilüfer, Çapanoğlu 2002:1-3). The former Minister of Agriculture, Vehbi Eser, have not yet given out the report on test fields conducted south in Turkey in 2000, according to several case informants.

It is exactly the economic power of MNCs that allows them to conduct test of GMOs, in Turkish fields. A problem common especially for developing nations, is that he legislations implemented by the government are not necessarily followed up due to lack of resources. The keepers, or '*power actors* ', of biotechnological capacities in Turkey are according to Dobos and Karaali (2003:442); '*the policy makers, the industry, and the big farms owners*', while '*the weak actors- the consumers, the local industry, the media and, in part, the scientists*' are clustered in the other end of the Turkish biotechnological power axis.

The Turkish private sector contacted while conducting the case, was the Turkish Industrialists' and Businessmen's Association (TÜSİAD);

'*TÜSİAD aims to establish the legal and institutional framework of the market economy and to ensure the application of internationally accepted business ethics. TÜSİAD believes in and works for the idea of integration within the international economic system, by increasing the competitiveness of the Turkish industrial and service sectors, thereby guaranteeing itself a well-defined and permanent place in the economic arena.*

TÜSİAD supports all the policies aimed at the establishment of a liberal economic system which uses human and natural resources more efficiently by means of the latest technological innovations and which tries to create the proper conditions for a permanent increase in productivity and quality, thus enhancing competitiveness'

(TÜSİAD 2001)

This private association gives out reports on current issues based on scientific research, and that the Turkish ministries are taking into considerable consideration. Also TÜSİAD states that there are no applications of biotechnology, neither GM developed products, nor imported products used, in Turkey. They also concluding that Turkish agriculture and food industry could get huge benefits from biotechnological applications. However, TÜSİAD makes aware that as long as Turkey is harmonising its regulations in accordance with EU, and the fact that EU has a very sensitive public when it comes to biotechnologically created food and agricultural product and are thus working on regulations, a Turkish application of biotechnology in these sectors is likely not to bring in any revenue for the short term. Never the less, they are concluding that it is important for Turkey to gain competitiveness by building up biotechnological competences and draw up a long-term technological policy map by skilled labour, indirectly stating that focus on high-value products, processed from a biotechnological industry, is preferred for future Turkish strategies (TÜSİAD 2001).

It is rather the larger public, the civil society, which is negative towards the application of biotechnologies in Turkish food and agriculture. Until recently there has been little awareness about GMOs among the Turkish citizens. In this regard, the recently created GDO'ya Hayır Platformu, the No to GMOs Platform, is subject of field study. They seem to gain more and more importance in informing the larger masses.

3. The GDO'ya Hayır Platformu

By focusing on the more informed segment of the Turkish society, especially on the different environmental NGOs and professional chambers that the GDO'ya Hayır Platformu, the No to GMOs Platform, consists of, I hope to discover the controversies over nature and GMOs that are taking place in the Turkish sphere of agriculture, biotechnological sector, politics and civil society.

How are the different actor's statements on GMOs constructed, shaped and regulated on a basis of knowledge, values, and institutions? Who are included or excluded in shaping and regulating the understanding and perception of GMOs? These questions are quite demanding. The scope over the newly created GDO'ya Hayır Platformu might give an insight in what is about to take place in Turkey when it comes to GMOs and the role of the civil society.

The "No to GMOs platform" is inspired by the European Friends of the Earth movement.

3.1 The Friends of the Earth movement

The Friends of the Earth (FoE) movement was founded in San Fransisco in 1969 by David Brower. Today it exists in 70 countries, consisting of grassroots environmental groups democratically elected.

The European branch, Friends of the Earth Europe (FoEE), is the largest grassroots environmental network in Europe. All the Friends of the Earth branches '*campaigns for*

sustainable and fair societies and for the protection of environment' by sharing knowledge, skills, tools and resources with each other.

3.2 The history of the GDO'ya Hayır Platformu

No to Genetically Modified Organisms

To protect our biological diversity,

For sustainable agriculture,

For equal, just and safe food,

So that life cannot be patented!

www.gdoyahayir.org

The "GDO'ya Hayır Platformu" or "No to GMOs Platform" is a civil society movement founded in March 2004 in Istanbul on the initiative by Levent Gürsel Alev. GDO, '*Genetiği Değiştirilmiş Organizmalar* ', is the Turkish word for Genetically Modified Organisms. It was started by several Non Governmental Organisations (NGOs) in Turkey working '*in the area of ecology, environment, agriculture, and consumer rights, including unions and professional chambers'* (from their web page www.gdoyahayir.org).

Alev's idea of starting such a platform came into mind after participation in a NGO happening by the end of 2003 in the south of Turkey. At this gathering he became aware of the lack of concern among ecology and environmental activists regarding the introduction of genetically modified organisms (GMOs) in Turkey. There was no questioning around GMOs, so there was an urgent

need to map the situation and make a good description of the issues at stake. He wanted to create a link between the consumers and the distributors and thus build a net of information.

After the war on Iraq, two platforms were created. One was Barış, Peace, and the other was the GDO'ya Hayır Platformu. Alev gathered interested NGOs which now make up 30 all together and made an 18-paged declaration in 2-3 months. The GDO'ya Hayır Platformu was thus created, inspired by Friends of the Earth, and the name got adopted. Alev wanted to create a synthesis of the information obtained and gathered from these different Turkish NGOs, and make it have a less scientific language in order to bring awareness on GM Food among Turkish consumers.

Equality between all the NGOs the Platform consists of gives a flat structure, where they discuss and reach consensus together. They share the entire honour and all the small actions are coordinated. However, when they created the Platform they discovered that the NGOs supported by firms were a little ‘far a way’ from their core. The Platform consists of working groups with different tasks. It was a working group that made the declaration constituting the platforms principles that is called the "Declaration of No to GMOs Platform" in February, a month before the foundation of the platform itself and it was on this meeting they adopted the platforms name.

They may be characterised as consumers, broader public and activists as well and thus be the *weak* actors according to Dobos and Kaarali (2002:442). I find it interesting how they have pooled their efforts in solidarity against genetically modified organisms by forming this GDO'ya Hayır Platformu, managing to unite the different NGOs and trade union groups in Turkey and making such an impact that I’ve seen they have done.

As the Platform seems to be so diverse, but yet collectively engaged in changing politics, it may defined as a kind of new social movement.

3.2.1 Social movement

A social movement has pluralised in definitions since it was defined by its historical connotation to the working class of the nineteenth century. A common definition is that *social movements are uninstitutionalized groups of unrepresentended constituents engaged in sequences of contentious interactions with elites or opponents*, (Tilly in *The Social Science Encyclopedia,* 1996:792). In the free encyclopedia wikipedia, social movements are defined as '*a type of group action. They are large scale informal groupings of individuals and/or organisations focused on specific political or social issues, in other words, on carrying out social change* '(*social movement* URL: *www*.wikipedia.org).

Social movements normally vary in several ways. The GDO'ya Hayır Platformu are concerned with setting agenda and influence politics in questions on GMOs and other biotechnological products and are thus a kind of syncretism of '*interest group and social movement-type organisation which combine a capacity for contentious collective action with more traditional lobbying and educational activities* (Tarrow in *The Social Science Encyclopedia*, 1996:794). The GDO'ya Hayır Platformu differ thus, along with other professional movement organisations, from earlier social movements by their abilities to utilise and *gain access to media,* the *use of innovative forms of collective actions,* despite their *scarcity of resources* (Klandermans in ibid). They have their own distinct perception or construction of GMOs. The Social Construction of Technology which may be applied for this case study will hence be explained.

4. Social Construction of Technology (SCOT)

Wiebe Bijker and Trevor Pinch developed a theory called Social Construction of Technology (SCOT) in the 1980s that is one of the most used social constructivist theories in the study of science and technology. I chose to use this theory as it seemed like the best tool for working with knowledge constructions and perceptions of GMOs/LMOs among different relevant social groups.

4.1. Behind SCOT

Social constructivism has it origins from the sociology of scientific knowledge and from the history of science, the model is thus '*strongly cognitively oriented*' (Bos in Mitcham 2000:49). The Empiricial Programme of Relativism (EPOR), is a more established approach than the SCOT within the sociology of scientific knowledge. EPOR is emphasising '*the empirical study of contemporary scientific developments and the study, in particular, scientific controversies*' (Bijker, Hughes and Pinch 1987:26-27), but as SCOT is the sociology of technology, it might be fruitful to use for the GMOs as technologies (as well).

The SCOT mode of thinking was developed by Wiebe E. Bijker in the historical writing about the development of the bicycle that was published in *The Social Construction of Technological Systems* (1987), a book containing several essays that he co edited together with Trevor Pinch and Thomas Hughes. The approach tries to challenge classical ideas of technology, such as perceiving it to be an autonomous force driven by it self, not influenced by social processes. Meanwhile '*the constructivist argument is that the core of technology- that which constitutes its*

working- is socially constructed' (Bijker in Cutcliffe and Mitcham 2001:28). Bijker claims we should try to *understand technological culture* (ibid) because we live in one, as well as he want to *politicize* and *democratize* this "*modern scientific and technological culture by engaging more citizens in political deliberation*" (in Cutcliffe & Mitcham 2001:19). SCOT is in other words a quest for democratisation of technology, after clarifying the *political dimensions* of its *role* (ibid). Democratisation is, to bear in mind, not necessarily understood the same way everywhere and neither are the ways of achieving it.

The SCOT approach wants to take into account the historical origins of an artefact or technology, in order to avoid it being '*black-boxed*' (or red or green or blue boxed, why not), in other words where the users are taking the artefacts or technology's role and function for granted due to agreement on how it should be. The SCOT modes of seeing argue for unmaking the technology's assumingly autonomous force, and thus show how technology is shaped by social factors. Technology does not develop by its own logic, which is the technological deterministic view. SCOT gives a '*thick description*', which is according to Bijker (1987:5) '*looking into what has been seen as the black box of technology (and for that matter, the black box of society).* Such a *thick description results in a wealth of detailed information about the technical, social, economic, and political aspects of the case under study*.' This will in turn democratise the modern science and technology according to Bijker and Pinch, and reveal that our *language*, *norms*, *values* and *identity* (Wijbe in Cutcliffe & Mitcham 2001:20) also constitute parts of technological culture and are fused in with science and technology.

4.2 Explaining SCOT

There are four interrelated main concepts in the SCOT theory according to Klein and Kleinmann (2002:29-30); the '*interpretative flexibility*', '*the relevant social group*', '*closure and stabilisation*', and '*the wider social context*'.

4.2.1 Interpretative flexibility

Wijbe and Biker '*argue that both science and technology are socially constructed cultures and that the boundary between them is a matter for social negotiation and represent no underlying distinction*' (Bijker, Hughes and Pinch 1987:11). Their stance is denying technological determinism as the democratisation of the meaning of an artefact is seen to be shaped by social processes embedded with values, interests and choices. This places a bigger emphasis on the actors involved as agents of change. A technological artefact has a socially constructed character as Bos says (in Mitcham 2001:48); '*the definition of what a bike was (its meaning) was not fixed from the start, but got its stability during a timely process of " negotiations" between different social groups*. The different social groups may in other words be seen to actively negotiate over the meaning of an artefact. A Genetically Modified seed may in this respect be seen safe and ethically okay by some while by others it may be seen as something unsafe despite tests results showing the contrary. The interpretative flexibility is in other words describing that it is possible to perceive, or evaluate, the assumingly same thing, or the same scientific findings, differently, as well as that there is flexibility in design. Bijker says (2001:26) that '*it shows that neither an artifact's identity, nor its technical "success" or "failure", are intrinsic properties of the artefact but subject to social* variables', that is to politics as well.

4.2.2 The Relevant Social Group

The different social groups are thus producing different knowledge, and may also be named cognitive actors as they are shaping the technology. The relevant social groups are important not to choose a priori, but they come to light as their views are describing the technological artefact. Methodologically speaking it is the scientist that demarks a relevant social group. Bijker puts forward that '*the key element in the identification of a relevant social group is that the meaning of an artefact is shared among the members of a social group*' (Bijker in Bijker, Hughes and Pinch 1987:173). The relevant social group embodies thus a shared knowledge and interpretation.

4.2.3 Technological Frame

These relevant social groups get their interactions structured by a *technological frame* that is defined by Bijker to be '*composed of, to start with, the concepts and techniques employed by a community in its problem solving. Problem solving should be read as a broad concept, encompassing within it the recognition of what counts as a problem as well as strategies available for solving the problems and the requirements a solution has to meet*' (Bijker, Hughes and Pinch 1987:168).

Technological framing is thus happening *between* actors as it is framing their *interactions* in solving a problem, as well as it is broad enough so as to apply to *all social groups* and not just the experts of the technology. Meanwhile, a '*technological frame will never structure the actors interactions completely as their degree of inclusion in the frame will differ, as well as they will*

belong to different technological frames' (ibid: 173). Thus '*the concept of a technological frame refers to the ways in which relevant social groups attribute various meanings to an artefact. The concept of inclusion is introduced to account for the observation that there are varying degrees of interaction within any one technological frame*' (ibid: 108). Some actors have however low inclusion in the technologic frame and they may feel they do not have a great choice in deciding over the artefact, they can either accept it without being able to shape it, or they may continue without by leaving it. This is the total opposite situation for the high included actors, '*there is no life without the exemplary artefact, but there is a lot of life within it*' (Bijker in Cucliffe and Mithcam 2001:29).

The technological frame is also a '*heuristic device making the descriptive "seamless web" of history*' seamless or less visible, by *simplifying* it (Bijker in Bijker, Hughes and Pinch 1987:185). A technological frame is coming into existence when a social group is formed and when an artefact reaches stabilisation (or consensus). This is called the '*technological momentum*' by Hughes (1987:176).

4.2.4 Closure and Stabilisation

After identifying the relevant social groups for an artefact or technology, there will be specific problems and conflicts regarding this artefact and thus different solutions emerge, which in turn will be defining the development of the technology as well as its degree of stabilisation.

Then Bijker and Hughes introduce the concept of closure; that is what occurs in science when a consensus is reached and the "truth" has been agreed upon from the various interpretations.

Rhetorical closure occurs if the relevant social group *sees the problem as being solved* (Bijker, Hughes and Pinch 1987.44). Closure can also occur by *redefinition of the problem*, which happens '*by redefining the key problem with respect to which the artefact should have the meaning of a solution*' (ibid: 46). The technology is stabilized. An agreement on the technology by the different social groups diverting in views, depend however on whether they are satisfied with the closure or not as '*in principle, the degree of stabilisation is different in different social groups*' (Bijker and Pinch 1987:39).

4.2.5 The Wider Context

The meanings artefacts are ascribed by different relevant social groups are influenced by their '*norms and values* [that are] *shaped by* [their] *socio-cultural and political situation*' (Pinch and Bijker in 1987:46) which thus may give a possibility to relate the actual content of the technological artefact to its wider socio-political environment by using the SCOT approach.

5. Criticism of the SCOT theory

A real criticism of the SCOT theory stems from a discontentment with it being to ignorant towards the end product, as well as not being able to provide '*any means for criticising and steering technological change, because of its inherent relativism* (Bos in Mitcham 2000:53). Things and objects, stemming from the material world, are not perceived as actors (or '*actants*'as they are called in the Actor-Network Theory) in the SCOT theory, an in this regard the '*material and casual factors* [are transferred] *to a domain that we can only know via their cognitive representation* (Bijker in Bos 2000:50). The end product is thus taken for granted by a SCOT approach. Langdon Winner interprets the deconstruction of technology to be focused on '*the product and its place in our social context*' rather than on the development process of the product, the history of a technological artefact. Winner argues for considering a products '*inherently political character, its value-ladeness*' as well. A counter argument against giving the same value to objects and artefacts like human beings is that it might be exactly a good reason *not* to give same value to non-humans as humans, because human beings are in a special position over material things I would claim myself. This might well be a good reason why choosing the SCOT approach in controversies over GMOs.

Others again, like Klein and Kleinmann (2002:28) claims that with such '*an agency- centred approach*' the '*SCOT scholars have made only limited contributions to illustrating the influence of social structures*' as they claim that also social structures, and not just agents of change are shaping the technology. Social structures might thus also determinate in the inter negotiations of an artefact.

It is neither sure that the SCOT- approach really enhances a more democratic participation in policy making and in defining the technological culture, knowing that the "actors" actions are not structured totally due to their different level of inclusion (and exclusion) in a technological frame. The notion of relevant social groups is according to Winner (in Klein and Kleinmann 2002: 30) indeed a '*pluralist view of society*', and '*implicitly, SCOT assumes that groups are equal and that all relevant social groups are present in the design process*es. It is easy to assume that not all groups in society are equal, and that some might thus be prevented from participating adequately due to power asymmetries. Russel (in Klein and Kleinmann 2002:31) throws light on how '*some groups may not be groups at all but may be a diverse collection of subgroups for which some actors claim to speak*'. The idea of reached consensus over a technological artefact between distinct social groups is also, according to Klein and Kleinmann, '*far too agency centric*' (ibid).

The social constructivism is said to be relativistic only when it comes to methodology, it still gives the possibility of ethical and political positioning when it comes to technological choices. A social constructivism perspective may deconstruct the making and workings of a technology, which in turn will show how its concretisation actually is quite heterogeneous. Meanwhile, the criticism goes that an empirical approach of the case studied does not necessarily give the whole insight into the different elements, social institutions, values and actions taken, mainly of the critiques, on power asymmetries, mentioned above.

Bijker actually agrees upon the criticism of the SCOT theory. It has been a useful tool for highlighting a stance against technological determinism, but he further argues that there are other ways to counter the same questions. These questions are according to him still '*the issue of*

control of and intervention in technological change (Bos in Mithcam 2000:54). In other words this may be questions of *power*, a concept Bijker further examines in; '*Of Bicycles, Bakelites, and Bulbs: Toward a Theory of Sociotechnical Change*' (1995). In this work he adds the notion of technological frame (explained earlier), that gives more importance to structures, and thus may be more gender sensitive.

5.1 Gender sensitivity: missing?

While unmasking the relevant social groups, are we then being aware that the choice might be based on already existing social structures? This would mean that there might be affected groups that are excluded or where their participation in someway is excluded. With the introduction of technological frame, Bijker recognises the importance of structure, but opponents argue this should be more included in the SCOT approach than is actually the case. Structures might well be influential in forming the wider social context and thus gender roles, as well as other roles. Critiques argue for taking structures more into account in order to broaden the social constructivism approach.

This goes hand in hand with the earlier mentioned observations made by Şerif Mardin (1969), that Turkish politics will keep continuing to acquire meaning in the context of the (Ottoman) social structures that did not quite willingly accepted the political participation of (large) masses. Structures do indeed constitute for contemporary cosmologies and ways of behaving and acting.

5.2 Cultural theories

As the method used in the case study derives from social anthropology, with namely field work and participant observation as tools, cultural theories, such as Mary Douglas' and Aaron Wildavsky's Cultural Theory of risk is another alternative (or maybe not so alternative) theoretical explanations for the SCOT approach.

6. Case: the GDO'ya Hayır Platformu

'*Case study is a strategy for doing research which involves an empirical investigation of a particular contemporary phenomenon within its real life context using multiple sources of evidence.*' Robson (1993:5)

The case consists of qualitative data such as my, as a researcher, perceptions and analysis of how the GDO'ya Hayır Platformu is perceiving GMOs, biotechnologies in general, and other related, relevant issues based on how they work and what they do, and also by interviews with actors that are outside of the Platform, but still related to it in one way. A short stay on an ecological farm also provided new insight in the values residing among the members in the GDO'ya Hayır Platformu.

With the creation of GDO'ya Hayır Platformu, The No to GMOs Platform, Turkey gets a grass root founded organisation that may act as mediators or agents of change in the definitions and perceptions of GMOs. This was particularly visible with their first and biggest action, conducted throughout Turkey, '*The Monster Tomato Tour*'.

'*The media could do nothing else than start writing about our activities*', like one GDO'ya Hayır Platformu member said about the impact of their first activities and campaigns, such as the Monster Tomato Tour. This resulted in great attention. People started at least to be aware of something called biotechnology and transgenic crops, and the action received a lot of attention in the media. This in it self is a great achievement, to make people more aware, and it also led to

national discussions and agenda setting.

6.1. The relevant social actor: a coalition of different groups

The GDO'ya Hayır Platformu consists of 30 NGOs. They came along as they saw the importance of joining such an effort in a huge environmental concern, that will keep on increasing as Turkey develops and seeks to concretise its innovation and technological policies.

AKÇEP (Akdeniz Çevre Platformu), the Mediterranean Environmental Platform, is a network of environmental volunteer groups from east and west Turkey that mostly focus on local issues.

BAKCEP (Batı Karadeniz Çevre Platformu), the West Mediterranean Environmental Platform.

BAŞMAK GÛL KOOPERATİFİ, The principal Rose cooperative.

BİYOLOGLAR DERNEĞİ, the Biologist Association.

BUĞDAY DERNEĞİ ve DERGİSİ, the Wheat Association and Magazine. Buğday is the Association for Supporting Ecological Life and is maybe the most known environmental orientated NGO for Turkish consumers as it is the only native environmental NGO that is professional as well as they distribute a monthly magazine through out Turkey; over 6000 copies are made available each month.

The word "Buğday" means *wheat*. This fits well because Turkey is said to be "the mother of

wheat", as it is the country of origin for wheat, as well as it is the biggest cereal product in Turkey.

Dr. Cengiz Aktar and Victor Ananias, president of BUĞDAY, claims in an article printed in Turkish Daily News (www.turkishdailynews.com) that organic farming and rural development is a viable national solution for Turkey's efforts on harmonisation with EU's Common Agricultural Policy (CAP). The organisation has also been consulted by the Turkish government about a Turkish law on organic agricultural.

ÇEVRE İÇİN HEKİMLER DERNEĞİ, is the Association for the Environment of Physicians.

ÇEVRE MÛHENDİSLERİ ODASİ. The Chamber of Environmental Engineers, is mostly focused on the national implementation of the Cartagena Protocol. One of their main challenges in their work, I was told, is the lack of contact with farmers.

DEĞİRMEN ÇİFTLİĞİ, DOKCEP (Doğu Karadeniz Çevre Platformu).

EKODER, is a non-office structure volunteer based organisation in Bursa with many intellectuals, focused on agricultural issues. They were a driving force behind the building of the GDO'ya Hayır Platformu and the organisation of the Monster Tomato Tour.

EKOLOJİ KOLEKTİFİ's young volunteers (that are mostly students), based in the capital Ankara, are mainly occupied with awareness rising about different environmental issues. They, a long with Buğday, manage to attract some attention in the national media.

ETO resides in Izmir and is mostly working on agriculture and environmental issues. Its majority consists of students and scientists. In addition to have good contact with local media and the government, they also communicate well internationally.

GREENPEACE The Turkish branch of this globally known NGO is working on an information campaign that will especially handle toxic campaigns.

JADE MUNZUR ÇEVRE KORUMA DERNEĞİ is the Jade Munzur Association for Environmental Protection.

ONDOKUZ MAYIS ÛNİVERSİTESİ, The 12th of May University.

EKOLOJİK YAŞAM KULÛBÛ The Ecologic Life Club

TOPLUMSAL EKOLOJİ GRUBU The Socio-Ecological Group

TÛKETİCİ HAKLARI DERNEĞİ

TÛKODER

TÛRÇEK

TÛRKİYE KÛÇÛK ÇİFTÇİ SENDİKALAŞMA İNİSİYATİFİ The Turkish Small Farmer

Trade Union Initiative with the prominent figure Abdullah Aysu, manages to unite the different farmer's trade unions. Aysu is participating in several conferences and gatherings both in Turkey and abroad. He attended for instance the World Social Forum, where especially questions on farming, trade and subsidies are highly debated issues.

VETERİNER GIDA HİJENİSTLERİ DERNEĞİ The Food and Veterinary Hygiene Association

VETERİNER FAKÛLTELERİ MEZUNLARI DAYANIŞMA DERNEĞİ The Solidarity Association of Graduate Veterinary Faculty.

YEŞİLLER The Greens

ZİRAAT MÛHENDİSLERİ ODASI The Association of Agricultural Engineers

6.2 On the inside

The GDO'ya Hayır Platformu's biggest challenge in transmitting their message, telling about the risks of GMOs, is the lack of coherent information. The idea of the Platform, besides spreading this main information about the GMO risks, is to gather information from abroad and create a new international common language that may address such international issues.

The information among all these Platform members is being transmitted by internet. As they have created different working groups, the internet communication group is responsible for facilitating

the coordination among GDO'ya Hayır Platformu's many members. This information is mostly about meetings and news related to their field of interest. They have for one thing, a mail group where all members and also other interested may subscribe to (after an invitation). The Platform started by producing '*informational posters, stickers, buttons, bulletins, guides, and other materials*' as well. One of their aims is to make people aware of the risks with GMO containing food, and raise the level of information about biotechnologies. They arranged petitions and held public and private meetings of various kinds, where '*scrutiny of regulations and legislations was undertaken in order to undertake political pressure actions among relevant agencies and actors*'. Further on, they created the website www.gdoyahayir.org, as well as a news bulletin; '*Life is Ours*', which is published to disseminate news of all their activities.

In order to be able to do this they have to inform themselves about GMOs and the current national and international situation. That is why they hold meetings regularly once a week throughout the year with different scholars (some of them are also platform members) giving lecture on a specific topic. Before big events, like the Tomato Tour or the Ecologic Symposium at Gökceada, south west of Turkey, this year, they meet in working groups even more frequently.

As the platform consists of different professional chambers, amongst other Çevre Mühendisleri Odasi (The Chamber of Environmental Engineers) that was visited during the case study, they possess the necessary scientific knowledge in order to get the technical and engineering information correct. As an interior challenge some informants were stating was that they wished more contact with farmers.

They are also giving information about GMOs at secondary schools, and participating in various

meetings held by different interest groups and NGOs. There was a conference arranged last year on September 11th and also this year on the 10th and 11th of September at the private university, Sabancı, where both foreign and Turkish researchers and professionals are invited to discussions on the current biotechnology situation in Europe and Turkey. Under this symposium they also work with the Turkish implementation of the Cartagena protocol. As Turkey now has a coalition of different NGOs presenting consumer voices and concerns in the GDO'ya Hayır Platformu, they were invited to take part in the conference and discussions both years. The outcome of this conference is a case of interest regarding future strategies.

However, one of GDO'ya Hayır Platformu's biggest activities also catching huge media attention and hence creating awareness of the type the Platform wish to sow in people's minds is the Turkish Tomato Tour.

6.3. Constructing the Monster Tomato

In order to create awareness about GMOs, the GDO'ya Hayır Platformu decided to go touring with a big inflated tomato.

The idea of making such a tour springs out of an exact similar campaign that Friends of the Earth (FoE) in different European countries made in Europe from November 2003 until April 2004. It was part of a larger Bite Back campaign launched by the European Friends of the Earth movement in order to create awareness of the risks of GMOs and what they perceived as a USA-led attempt, by the World Trade Organisation (WTO), to make Europe accept GM food and farming. The US-based biotechnology industry, as well as the governments of Argentina and

Canada, filed a complaint to the WTO about how the EU blocked trade with their restrictions on GMOs.

The Platform members decided to borrow the tomato from the FoEE and they also got assistance in planning this tour, as well as providing financial aid.

15 local NGOs with 100 volunteers involved were cooperating and preparing for a half year in order to make the Monster Tomato tour travel around Turkey. The GDO'ya Hayır Platformu also state this campaign was launched because the pro-GMO stance have a very scientific language which make their information hard to share with people.

There were no regulations on GM food in Turkey, but after the campaign ended, they managed to hand in signatures from the petitions held around the country over to the government.

The Turkish Monster Tomato Tour started in Istanbul the 2nd -4th of October 2004 and gathered 3500 signatures the first day and got broadcasted on TV and in the radio. The 5th of October the Tomato visited Izmit, the 6ht and 7th Bursa, in Izmir the 9th and the 10th the platform members even participated in a local TV talk show. The campaign had collected over 30 000 signatures within this first week. Mogla vas visited the 11th and Honaz the 12th of October. When the tour reaches the capital, Ankara, it had achieved enormous media attention.

The whole campaign resulted in extensively raised awareness about the risks of GMOs among the common Turk. Media continued the public debate on GMOs which in turn made the government respond by inviting some Platformu members and drafting a law on GMOs.

Cooperation between the different Turkish, both environmental and non-environmental NGOs improved, as well as new contacts were established between national and international networks.

The whole Turkish Monster Tomato Tour proved to be a major positive experience creating awareness, improving cooperation and establishing links across borders and fields of focus.

6.4. Their idea of the (monster) GMO

Touring by imitating the European model seemed like a good activity for making the Turkish consumer aware of the possible dangers of GMOs in their food as explained. Being in Turkey, it is easy to recognise the importance of the tomato plant in Turkish kitchen, in comparison to for example the Norwegian or Polish kitchen. That this serves as a powerful symbol is thus understandable, especially thinking of how many people in Turkey are eating tomato containing dishes.

The tomato has become not only an emblem for both the European and Turkish environmental movements, but also being appropriated by the local vegetable seller in the streets of Istanbul, marking his vegetable “GDO-siz”, GMO-free. Even though the GM tomato is understood quite differently, it still serves as powerful symbol for the No to GMOs movement. The tomato as a symbol was chosen first because of the Flav’r Sav’r tomato that failed, secondly because it is *impossible to imagine a European cuisine without the tomato* (Santich in Harvey, Quilley and Beynon 2002:6), and thirdly because it is contradictory in itself that the first genetically modified whole food released on the market, the tomato, that got it qualities improved in order to have a longer shelf life, was conserved and used in tin cans.

The fact that the tour already was conducted throughout Europe gives the action a flavour of '*catching up*' with the West, which is a very common old, evolutionary thought in development theory. Whether it was chosen because it proved to be a good symbolic act or whether it was chosen on a background for consolidation with European concerns that are already being acknowledge by policy makers, do not make such a big difference as the borderlines of these reasons actually are quite diffuse or overlapping. Nevertheless, it still worked for the GDO'ya Hayır Platformu to transmit their message, and thinking especially of how familiar the tomato is for the Turkish kitchen it surely made a long-lasting impact.

The GDO'ya Hayır Platformu's reasons for not accepting GMOs is firstly because '*you don't know how genes from living creatures introduced to another living organism (transgenes) are reacting with the recipients' other genes. You don't know the interplay between the genes, and it may cause another living creature harm and pain*', and secondly because '*patents on life should not be in the hands of firms. It should not be allowed to patent living organisms as one does not create something new out of something that has existed and been collectively known for centuries*' (interview with the GDO'ya Hayır Platformu).

Their definition of a GMO is; "*Any living organism having a new genetic material combination which is created by using modern biotechnology*" (Declaration of No to GMOs Platform), and their main concern is about how such GMOs may, or actually will, harm the genetic diversity by disturbing the natural structure and thus violate the balance in the ecosystem. They also fear the impacts GMO containing products may have on the human health, in terms of allergy reactions and transportation to other cells in the organism. Another reason why they fear GMOs is that they

'*a way of dominating* [and that] *patent rights are the mist important means to reach this dominance*' (ibid). The reason why they do not believe biotechnologies, or in particular the application of GMOs, are means to create *social goods* is because the genetic sources mostly tapped from the so called third world countries are in the hands of wealthy countries in the North, also called first world countries, or more precisely in the hands of a few Trans National Companies (TNCs) that are not only protecting their new inventions, but also the source for their creations, the life.

However, if this dominance should change the GDO'ya Hayır Platformu will still be against the creation, use and distribution of GMOs as they perceive them as risky for the environment and the human health. They are fighting for their rights to say no to GMOs, also by holding petitions in order to stop the Turkish state to release GMOs in the form of conducting test fields. This was the case in Adana, south in Turkey. The former agricultural minister has still not released a report for the tests conducted.

The technological frame is thus still being negotiated over, but it will hardly reach momentum without overriding one part of the relevant social groups involved.

6.6 Further plans

Some of the GDO'ya Hayır Platformu's members were telling the researcher, partly joking, partly serious, that they are sacrificing more time on the Platform issues than on their actual everyday work. They are continuously working with new projects, and meeting regularly, at least, once a week to discuss and plan more activities and campaigns. In July, when the weekly

sessions for the whole Platform ceased, the core of the Platform still continued to meet. They were about to plan an ecologic festival or session at Gökceada where several key speakers were invited. They are also thinking of making parcels in the city, in addition to their deep line that is about creating an impact on consumers and on Turkish policies.

They have achieved a lot despite their quite young united history, and they will surely gain a lot more impact on public opinion with the work they are undertaking on a voluntary basis. If their work will really contribute to stop or reverse the application of GMOs in Turkey in a significant manner, is yet hard to evaluate.

7. Method: field work and interviews

Making a social anthropological case study of the GDO'ya Hayır Platformu was not my first idea. A different point of departure was meant initially. The first interest turned around the role of the farmer in Turkey, and the possible interactions with seed companies. However, due to several reasons I let this initial desire behind, as I discovered it was equally exciting to investigate another set of questions related to power, namely the power constellations between civil society/public, and official and private actors. I am simply taking up the thread after an earlier conducted study on agricultural biotechnology in Turkey, by Eva Dobos (2002). She stated a study on the role of the civil society in the Turkish biotechnology capacity building would be interesting to investigate. While starting off with some names I got by my Turkish networks, I discovered and came in contact with the GDO'ya Hayır Platformu.

7.1 From the real world

This case study is in other words a *real world* (Robson 1993) enquiry because it *predicts effects* of the work conducted by the GDO'ya Hayır Platformu, it is out in the *field* and not in a laboratory, it is about an *outside organisation*, it is *conducted by* me as *a generalist researcher*, it has *strict time* and *cost constraints*, it relies on *multiple methods*, it is *currently viewed as dubious by many academics*, there is a *need for well developed social skills* (Robson 1993:11-12). As it is rooted in the real world, the level of access to and co-operation with the different actors, might suffer due to several reasons. Language, gender, educational and cultural backgrounds are for instance such aspects that might open up or close (the researcher's) possibilities.

7.2 Reflexivity

The reason of why I refer to myself, I, throughout this thesis, is because of the social anthropological research tradition where the enquirer, or researcher, uses her/himself as a tool in the investigation. Kirby and McKenna (in Robson 1993:22) says that '*Remember that who you are has a central place in the research process because you bring your own thoughts, aspirations and feelings, and you own ethnicity, race, class, gender, sexual orientation, occupation, family background, schooling, etc. to your research*'. This implies that the researchers '*goggles*', are the point of departure for defining what s/he see and experience in the field. It may be hard to distinguish what is research, when am I "on" or "off" the research stage. At least in this case, I knew I was off while being at home or not interacting with none of the participants.

7.3 Open and semi-structured interviews

A good way of obtaining the information desired, turned out to be by interacting with the Platformu's key people. However, in the beginning I was not fully aware of how they worked and what they actually were doing. In order to let their views be expressed, I started with conducting open and half structured interviews. I met with an English speaking Platform member that put me in contact with another Platform member, which had written a PhD about the legislations around GMOs. On that time I was not aware of her being a GDO'ya Hayır Platformu member. Coming not fully prepared and not knowing what exactly to write about, switching over to making the interview in French as the informant was (along with others I interviewed) more comfortable with that, made the information I obtained unstructured. Anyway, I followed up what the people wanted to tell with more persons to contact and this also created more questions to pose.

7.4 Obstacles

The language was obviously an obstacle in firstly deciding upon the research topic. After deciding the overall aim of my study, the language barrier also hindered me in obtaining some more back ground information before meeting with the informants, as well as conducting better interviews and understanding everything that was expressed. Even though I gained some basic knowledge in Turkish in the end, this was not sufficient to understand everything I wanted to understand.

Luckily many of the people I met, not only the professors, spoke quite good English or French. While interviewing the key informants of the Platform, others translated simultaneously. However, the problem of using interpreters is the preciseness in formulations or the possibility of having the first hand knowledge on what the exact spoken word was. Another problem with my specific case was the continuously switching between Turkish, English, French and Norwegian. It did not only result in making my notes and thoughts somehow messy, but also constituted a challenge for the informants not being able to express themselves fully in just one language.

This is point in the thesis which could be conducted differently, with more structured interviews using professional interprets and/or people which did not constitute relevant social actors themselves. Still, letting the Platform members translate the message themselves, provided an excellent understanding of their message, their values and thus their perceptions, which is one of the main purposes with this study, to understand their realm.

7.5 Participant Observer

In addition to open and semi-structures interviews, as well as some phone interviews with less relevant actors, together with literature search and relevant articles, participant observation within the GDO'ya Hayır Platformu seemed like the best option for giving me fruitful insights in their work, values and perceptions.

One of the Platformu's core group privileged me to get in touch with it's member's views. They already knew my intentions before I joined them, but still without knowing exactly what I was interested in knowing. In the beginning I was not fully aware myself of what I exactly wanted to know from these exact actors.

I did not have any pre-existing links with the group coming from abroad. A relationship of trust needed to be established, but this came along the way without me actually being aware that this was something that should happen. The informants, despite the language barrier, were able to translate simultaneously for me while interviewing. Also when attending some of their meetings when they gathered to plan and discuss the ecological festival to be held at Gökceada they were about to arrange in September, some of the members themselves translated. There was anyway a lack of a clear cut understanding on, but they let me participate in their work by inviting me.

A really mind opener was a week-end on an ecological farm, in Gelibolu, Çannakale, belonging to some family of the key members, and where they were helping to run whenever they could. I understood their point of view in a totally different way, seeing what they appreciated and what they desired for life. The farm also had sheep, cows and dogs. They did not use any other

"inputs" than manure, water and sun in order to make their crops grow. Personally I was amazed by the fact that they were still able to produce such amounts of food as they actually did. They grew taze fasulye (green beans), domades (tomatoes), misir (maize), patlican (eggplant), salatalik (cucumber), biber (pepper), semiz otu (mache en fr), sogan (onion) and yet some other crops. The biggest challenge they had was to cope with all the diverse activities and crops.

After this experience I clearly understood that it is a matter of values and being able to chose their way of life, without being exposed to risks and uncertainty, like GMOs imply for them. I see the difficulties the amounts of information (not) obtained cause in order to create a fair picture on the power constellations in the controversies GMOs in Turkey. A more prepared interaction with better knowledge of the language would probably have yielded far more accurate information, but I still believe the case gives certain knowledge about the situation of the Turkish civil society's green engagement.

8. Discussion and analysis

8.1 Social structures

The Social Construction of Technology (SCOT) -theory proved to fit well with my desire of knowing something about the set of values, knowledge and perceptions the GMOs are surrounded with among different Turkish actors, but especially among the so called *weak* actors. The critique regarding the SCOT theory, overlooking social structures, might still prove to have been limited in this case, as the so called weak actors, here as NGOs as a part of civil society, did made it clear that they were faced with huge structures. However, the farmer's some informants stated they whished they could be more in contact with might tell that even thought this theory is strongly actor orientated, some actors are still left behind, maybe exactly because of structure.

Before starting the case I personally heard in Turkey; "*How can we get in contact with farmers? We're academicians*", which might be taken as an example of what Mardin have written on the elitist thinking that still prevails in Turkey. My question is thus how it is possible to create an aware public and participatory research or feedback from different social groups if such attitudes are allowed to prevail? Luckily this was only a singular experience, not related to none of the informants for the case.

However, the relevant social group in this regard did manage to trigger a respond from the government by their biggest action ever, materialised with a big inflated tomato. Whether this reflects a long lasting involvement from the government's side in taking the civil society serious, is still a question of watching and being updated about the measures they are taking. The results

on the test fields conducted in Adana are still not reported. This is something I should verify with different sources, and might be one thing to test the current government on.

8.2 Diverting views

While interviewing some scientists the idea of the Monster Tomato suddenly became quite absurd, as I was told that there are no GM tomatoes today, at least not on the Turkish market. The tomato was indeed the first genetically engineered plant, given the name Flavr Savr, but for the scientists it seemed somehow hilarious to use this as a symbol. For the fact's sake, the tomato was a scary tomato, but not a GM tomato. It was used because it provides a good symbol for the imaginary of the general public throughout Europe about the possible monster tomato.

The opinions within the GDO'ya Hayır Platformu might also be diverted, as it is a mixture of ''*conditional opponents' (agricultural groups, concerned scientists, environmental groups, and public interest groups) who participate intermittently on an issue-by-issue basis and 'absolute opponents' who contests every issue* (Plein in Jon Hannigan 1995:165). Even though they are all gathered under the big No to GMOs umbrella, some of the members I talked to were not against all types of biotechnology. Some participants also leave after the initial start of such social movement, and as the group has become relatively huge, it might also divert in opinions after a while. However, with the common declaration, they are all distancing themselves from GMOs.

A survey conducted on biotechnological scepticism showed that the opponents were rather diverted in view, in comparison to the proponents.

8.2.1 'Blue' and 'green' resistance

Research conducted by T. Hviid-Nielsen on public scepticism in Norway towards biotechnology, and later tested in several European countries, revealed a '*traditional blue*' and '*modern green*' resistance. This resistance was in accordance with the more familiar divide among environmentalists; the modern to the left and the conservative group preoccupied with preservation of nature and its resources. Even though the characteristics differ throughout Europe, some common features were found. Both blue and green biotechnological '*pessimists*' have a higher *proportion of women* and of *rural residence*, and *high risk perception* of biotechnology, than the biotechnology proponents. Further characteristics of the opponents divert from each other. The blue traditionalists group is older and likely less educated than the modernist green, which attends university. The blue traditional group is more likely to be strong religious, have less knowledge about biotechnology, be to the right of the centre in politics and may be described as materialists, while the modern green group is rather to the left, strong non-believer and is post-materialistic (Hviid-Nielsen in Bauer and Gaskell 2002:184). The *modernistic green* may be a useful label applied to the GDO'ya Hayır Platformu that corresponds very much with the characteristics outlined.

8.3 Turkish and global green

To write the ethnography ('*ethnos*' is the Greek word for people, and '*graphy*' is the Greek word for drawing) of such a civil society based movement and the actors and issues they are involved in, has been to draw a picture of several parallel streams of both non-western and western modernisation processes that are taking place in Turkey.

The Turkish controversy is not unique in the sense that this is only happening within the country's borders, but it is a local example of a globalised controversy that is simultaneously taking place in other corners of the world as well. Calestous Juma says (2005:268) that '*much of the opposition to biotechnology is more a statement against the perceived risks of globalization than it is a rejection of the associated technologies. If the same technologies were available for local use, they would be treated differently*'. The Turkish green movement may have something in common with other grassroots movements around the world, as Juma uttered, and is also in line with what Jamison (2001:19) calls '*ecologically sound consumerism* 'which in turn '*becomes a badge* ' for '*the new middle-class*[..] *pursuing travels and consuming differently in the name of ecology*'. It becomes an emblem or '*a badge*' to be green orientated as '*a contradictory to global consumption patterns*'. On the other hand, this opposition, even though it is global, it may just have found its local response in the GDO'ya Hayir Platformu, a glocalised movement.

The '*risk society*' that amongst others Ulrik Beck claims we live in, is meanwhile saying that a social movement is not necessarily carrying an alternative political activity, but *play on emotional reasons for participating in code-challenging networks* (ibid). However, I was not able to discover the Platformu's 'hidden or tacit dimensions of their collective actions, as I believe it is not a matter of explaining their motivations, but rather the cosmologies. They seem all very much endowed in making a change, but of course it may be both be in line with the global green movement as well as it is the creation of a non-western modernity.

GDO'ya Hayir Platformu in Turkey is therefore interfering with a range of issues of societal concern, especially worrying about the environmental and health risks that might come along

with the introduction of genetically altered food and seeds in Turkey. This is still a young movement, and unique in Turkey, so it is interesting to see whether if and how their voices are being heard and if they are ascribed the role as mediators between the science and the broader uninformed public for the future to come.

They may well be seen upon as social entrepreneurs and opinion makers. They have a special position as they are a new, and the first and only one of its kind in Turkey, unified platform created out of maybe earlier a bit marginal and other more influential interest groups, mainly on grassroots level, and obtaining relatively great media attention. They are pooling their resources and efforts together in order to inform about and stop the introduction of GMOs into Turkish fields and stomachs, and this may be shaping public's acceptability of GMO containing products on the Turkish markets as well as in Turkish fields, if the government decides to take their own civil society into account, and not just reflect their policies coloured by Europeans (which anyway also are GMO sensitive). The GDO'ya Hayir Platformu is filling a void that media is paying attention to, and is therefore interested in following up.

Whether the GDO'ya Hayir Platformu is sufficiently included into the *technological frame*, so as to form a substantial ecological critique (that might be able to shape the situation of a possible introduction of GM food in Turkey), is yet too early to assert. Notwithstanding, I believe they are increasing the level of public awareness. If the decision makers will take their informed public into account, their viewpoints of the Platform may make an impact on measures and decisions that are to be taken.

Hierarchy of knowledge and imbalance of power hinders a fair transmission and thus impact of

views in the society as a whole and the different actors contacted in the Turkish case on GMOs, have hence either more or less influence (or level of inclusion) on for example policymaking or public opinion.

Their work and opinions are one side of how to view nature. The different actors contacted, but not necessarily expressed here, also exemplify how plural opinions and perceptions of nature may divert. The cosmologies are, and thus the meaning attributed to nature, are constructed, and interchanged between different geographical, spatial and social borders. According to Francis Fukuyama (2002) human nature and religion defines what it is to be human being for us, and provides us thus with meaningful concepts, just like Mary Douglas (in Purity and Danger) explains how people tend to classify the natural and the unnatural in order to create cosmos, order, out of chaos, disorder, to organise their world (views). The things that fall betwixt and between are matters out of order, out of place. A GMO may be perceived as something liminal, a matter out of place of the natural order.

That is why the debate over whether GMOs are dangerous or how risky they might be, always will be under continuous negotiations, even though a forced “consensus” might be reached.

9. Conclusion

Turkey is indeed characterised by great dynamics, and the acknowledgment of the important contributions from an informed civil society, also among the scientists and policymakers, is proving that further decisions may be negotiated over in another way, not simply by following the European consumers' reactions. Turkey is about to have their own voices. The message from the GDO'ya Hayır Platformu has reached the broader public, by the help of a hungry media, also relatively unaware of the issues. The corner vegetable shops are advertising their tomatoes as "GDO-siz", GMO-free.

However, it still remains to see whether they have an impact on further policies and what kind of effects their work has. It seems like all the actors in the controversy are agreeing upon taking safety measures seriously.

The discourse about the adaptation of GMOs is a value conflict over a technological change, which touches questions of social justice and equity. So I believe it is difficult to achieve consensus or technological closure with the introduction of GMOs in Turkey, because the values that are guiding for example the GDO'ya Hayır Platformu's opinions are diverting a lot from other's views. Because the knowledge-economy (or society) is very pluralistic and flexible, and also open to '*tacit*' knowledge (Jamison 2001:68) which may hide the different social groups' agendas behind different ways of acting, it may be difficult to act and make impacts in a fair manner.

The elitist view among some of the educated may also hinder a fair and balanced possibility to make an impact on policies. The balance of power and influence among the cluster of weak and strong actors (as Dobos has identified them to be) in each their end, is however under way of changing. The GDO'ya hayır Platformu's work is partly responsible for changing, or at least influencing, the balance of power in a more equalised manner, than was the case before. If this green movement's work will have a steady impact on public opinion, and then if politicians are taking their citizens views into consideration, and the question of whether this should be done, is still open.

It would be interesting to continue investigating the power balance, as well as the potential impacts GDO'ya Hayır Platformu's work has made, more closely. With a better knowledge of Turkish language and culture, one could keep an eye in the development of the media coverage of biotechnology, and especially GMO, issues in Turkey to catch the discourse and maybe discover more of the values guiding the promotion of such assumingly social goods.

Another important issue for future research would be (Turkish) organic farming. As Buğday were claiming that organic farming and rural development would be a viable solution for Turkey, it should surely be an issue to focus on in the EU accession process. The question is about what social goods Turkey wants to produce, and how accessible these "public" goods will be.

'*To create a new world order founded not on elitism, privilege, or force but on effective solidarity in the face of human needs* ' (Goulet 1989: 249), whether with or without GMOs, is a task of creating creative solutions for knowledge exchange and fair power symmetries of influence.

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Appendix

Appendix 1

1. Persons who gave interview face-to-face or provided information by phone/mail in Turkey, Istanbul, May - July 2005:

Forsmann, Zeynep Kivilcim	Professor at Istanbul University and Platform member
Alev, Levent Gürsel	Platform founder
Uğurlu, Örgen	Secretary General in the Chamber of Environmental Engineers, Istanbul Branch. (UCTEA)
Ulusöy, Yelda	Platform member and translator
Ayman, Dilek	Platform member and translator
Prof.Dr. Çetiner, Selim	Molecular biologist, Sabancı University. Reports about Turkish biotechnology situation to OECD.
Pof.Dr. Başağa, Hüveyda	Biochemist at Sabancı University, conducted TÜSIAD report.
Lord, Tracy M.	Platform member and teaching at Boğazici University.
Isik, Yusuf	Economist, formerly advisor in the State Planning Organisation for an MP on strategic research.
Temel, Emre	Formerly in the seed business, now doing conventional agriculture

As well as interacting with several other GDO'ya Hayır Platformu members

2. Persons/institutes contacted, but interviews were not conducted

Aysu, Abdullah	Farmer's Trade Union Leader and Platform member
Mr. Eser, Vehbi	Turkey's Agricultural Minister until May 2005.
TÜSIAD	Food and Agricultural Committee
MONSANTO	Answered negatively for the possibility of conducting interview
TÜBITAK; Arun, Özge Özgen	Drop-out from the Platform, working for the government (TÜBITAK)

Appendix 2. The Declaration of the GDO'ya Hayır Platformu

Declaration of No to GMOs Platform:

Life cannot be Patented

A ghost threatening our dining tables, our health and our future has been around for a long time now. The name of this threat caused by multinational companies and greedy investors is: Genetically Modified Organisms, shortly GMO. In the international literature it is usually referred to as GM or GMO. All the genetically modified organisms are included in this framework. The definition of GMO in this paper is: "Any living organism having a new genetic material combination which is created by using modern biotechnology".

Biological "richness"

One of the main concerns about GMO is the fact that, by spreading through the natural plant species, the modified genes destroy the genetic diversity in their natural habitat, cause a deviation in the natural structures of wild species and violate the distribution and balances in the ecosystem.

This is one of the most important issues that should be taken into consideration in Turkey. Turkey is a very rich country in biological diversity especially when compared to Europe. 2 thousand out of our 11 thousand plant species are endemic ones that exist nowhere else. Just like the underground resources or historical remains, the plant and animal species in a country are among the most important sources of that country. According to ecologist Barry Commoner, if the ecological systems are left under too much pressure, there may be sudden and shocking disasters. It is out of doubt that GMO, which contain many foreign substances such as chemical drugs and animal genes, can cause such disasters. Commoner says: "ecological system is an amplifier. A tiny turbulence somewhere may have bigger and delayed effects somewhere else." The species, which are used in modern agriculture and are genetic copies of one another, are raised as prototypes in vast areas. Species used in modern agriculture are genetically identical plants raised in vast areas. Though this production method, known as *monoculture,* has several economical advantages, in nature every benefit has a price. For example, identical units of the monoculture are equally affected from diseases, which can spread really fast and destroy the whole produce.

As the monoculture method is used more frequently, the nutrition and taste of the foods we eat also become alike. The species that have already decreased in number due to the effects of modern agricultural methods are now further threatened by GMO, since the modified genes of GMOs may disperse to the traditionally raised products around.

The GMO pollens may be carried to the traditionally produced corps of the neighboring fields by winds and bees. So the other corps becomes resistant to the pesticides and herbicides that exist in genetically modified corps. As a result of the environmental damages of Frankenstein Foods –the

name given by Anti-GMOs to GMO products- such as clovers that carry the genes of the cholera bacteria, potatoes that carry chicken genes, cotton that carry scorpion genes and tomatoes that carry fish genes, new Frankenstein's are born.

How do GMO products affect our health?

One of the main disadvantages of the GMO products is their negative effect to the human health. According to the experts the health risks are as follows: resistance against antibiotics, toxic or allergic effects in humans and animals when used as food, possibility of increasing the infectivity of the microorganisms in human and animal body when taken directly. Everyday, new scientific researches are made which verify the health risks of GMO products. For example, transgenic soya bean, which carries a gene of Brazilian nut, causes allergic reactions in people who are allergic to nuts. Latest experiments carried out by Arpad Pusztaria who works in Rowett Institute, uncovered new doubts about GMOs. In this research it has been found out that the genetically modified potatoes are toxic to mice and they have several effects such as disorders in the immunity system and viral infections. Mice, which were fed with non-GM potatoes, were healthy. Later on, the experiments revealed that toxicity was a result of the gene transfer method.

Another experiment showed that the DNA we receive through food may be transported to our cells. Until very recently, it has been thought that DNA could be digested in our intestines. However the experiments proved just the opposite. In the intestines of the mice, which were fed, with the DNAs of a bacterial virus, large particles of virus DNA were found which could live along the inner intestine and could pass to the blood. The DNAs were also seen in the leucocytes,

in the liver and spleen cells, and it has been proven that the virus DNA settled to the mice's genome. It has also been found out that the virus DNA that was fed to the pregnant mice, passed to the cells of the embryo and the newborn babies.

Do GMO really increase productivity?

Is it possible to have an increase in the agricultural production thanks to GMO? As every scientist working in the fields of ecology or natural sciences firmly states; in nature there is no benefit without payback! The paybacks of the revenues received through the increase in agricultural production are environmental pollution, global warming, species in extinction and many other environmental problems.

It is really difficult to give exact statistics, as the GMO agriculture is a new method. However, the rules are valid in this field as well. It is possible to have an increase in productivity for a while by using this method, however, it is impossible to keep this increase permanent. Of course we must not forget the payback we are due.

The productivity of GMO species is lower than that of traditional seeds. This fact alone contradicts the arguments of patent holder companies of the sector. GMO products are less productive, while seed costs are higher than that of traditional agriculture and maintenance costs are equal.

Can genetically modified organisms overcome hunger?

One of the main points defended by those who are for using GMO is that, GMO are necessary to meet the ever-increasing food demand of the world and to find a solution for the hunger problem.

Most of the ecologists think that the hunger problem of the third world countries is not a result of lack of production potential but of unplanned use and unbalanced distribution of the production capacity. The experts believe that the existing agricultural capacity is enough to meet the needs of the world population. According to the report of United Nations Food and Agriculture Organization, dated 1990, the increase in the production of grains is 50% more than the increase in population. Of course these statistics do not mean that there is no hunger problem in the world. But the problem is not because of production, but of uneven distribution.

If we have a look at the countries that are facing hunger problems, we see that almost all of these countries are ex-colonies of the Western countries. Their agricultural economies are established to feed other countries' benefits. Even after becoming independent, most of these countries have implemented agricultural policies that depend on exportation because they were dealing with economical problems such as foreign debts. That means; instead of producing food to feed their people, they tried to produce export products that will bring foreign money. In many countries where people suffer from hunger problems, the fields, which were used to produce food for the people, are now filled with export products that can be sold to developed countries such as coffee, cotton, bananas, cacao, etc. For example in Ethiopia, even when hunger was at serious levels, coffee production and exportation still continued.

On the other hand, this issue has another dimension: waste and consumption craze. According to the statistics of the USA Department of Agriculture, the USA citizens waste more than 25% of the food products each year. The research shows that, in 1995 only, the amount of food that were thrown away was about 43 millions of tones. If we assume that a person consumes 1.5 kg of food everyday, only 5% of the wasted food is enough to feed 4 millions of people. The process named "green revolution" when modern technologies, chemical drugs and hormones started to be used in agriculture was introduced to public as a solution for world hunger. However the statistics prove just the opposite. According to the World Development Statistics report of the World Bank, which was published in 1993, the average income of an individual in a low-income country was about 2.4% of that of high-income countries in 1976. In 1982, this rate dropped to 2.3%, in 1988, 1.9%. From 1980 to 1990, the growth in GNP of the low and middle-income countries was 52% of the high-income countries.

It is obvious that we do not need GMO to meet the increasing food demand or to bring food to the places suffering from hunger. The reason of hunger is not the lack of food but the uneven distribution of food and unplanned agricultural policies. We cannot talk about goodwill when GMO producing companies try to enter the agriculture of the third world countries that are already dealing with problems in their agricultural policies.

What is the intention of GMO producing companies?

According to the statistics given by ecologist Pimentel, 32% of the total amount of energy used for an agriculture field, is used for the production of nitrogen fertilizer, 28% for the fuel used by agricultural machines, 15% for the production and maintenance of these machines, 11% for the power expenses, 4% for drying the product. Other expenses are: 2% for transport, distribution, potassium fertilizer, phosphor fertilizer and seeds. Those less than 2% are for: herbicides, pesticides, irrigation and manpower. As it can be seen clearly, the rate of manpower in industrialized agriculture is minimal.

When we examine the situation carefully, we can see that the abovementioned issue is not traditional farming, but agriculture industry. The key point is here. The farmer largely depends on several agricultural industry organizations to achieve produce from the field. It is not difficult to guess that an important part of these companies are multinationals.

8-10 companies dominate the world seed market of genetically modified agriculture and feed products. The main target of these companies is to shape the agriculture and stock raising sectors of all countries so that they have to depend on them for seeds.

Patent implementations on GMO

GMOs are a way of dominating. Patent rights are the most important means to reach this dominance. Today, GMOs are within the area of both product and technical patent rights. Genetically modified products are patented. Because the main income means of these companies are collecting the patent fees. For example, you may protect even the microorganism only with

the patent rights and there are big protection institutions in this field. However, this microorganism has been living in nature for thousands of years and you want the protection right and a monopoly right just because you isolate it from its natural environment, you display and prove its certain characteristics. And you receive this right.

Because it is very difficult to find and define the genes and it requires big investments (according to the European Patent Agreement), one can make an application and receive a patent on condition that he shows the functions of this gene –ex: which protein he coded and what are its functions. However, patents are for protecting the new inventions, which are applicable in industry. In genetic changes, only the technique used should be patented. All the other patents given for the genes that already exist in nature are not legal. This is biological crime. If the farmer reuses the excess seeds of genetically modified cotton, corn or tobacco, he has to repay a fee to the patent owner. One of the oldest and most fundamental methods, sparing seeds from your own corps for the following year is therefore totally removed.
Patent rights of the sources of the third world countries with rich gene resources, are gradually collected by a few developed countries, in fact by a few multinational companies.

In the west, as a result of the struggle of the environmentalist movements, plantation and import of GMO products face with serious obstacles. When compared to EU legislation, there is no legal development in Turkey about the production, export and import of these products. Everything goes on secretly. Neither the consumer, nor the producer is informed about this subject. However, it is very obvious that GMOs are harmful for the natural diversity and human health.

Liberalization of trade will be inescapable after EU membership. That means, tradable biotechnological products will be able to enter Turkey. For example, when we start to import and produce transgenic wheat products in Turkey, which is the motherland of wheat, we will pose a great threat to our own genetic sources.

Our demands:

As individuals who see ecological life as a whole starting from its production stage to the sociological level, and who adopt it as an alternative lifestyle preventing the world from taking bad routes, we demand:

1) We refuse the GMO products whose future impacts on ecology and humanity are still unclear, and which may disturb the ecosystem with resulting health problems. We demand that entrance of these products into Turkey should be prevented.

2) Agriculture on GMO is a mass destructive technique, which destroys all the other forms of agriculture, especially ecological agriculture. Therefore, entrance of GMO containing seeds to our country should be banned and agriculture on GMO should not be permitted. Agricultural production should respect the cycles and rhythms of the nature.

3) Foods containing GMO are a real threat to the right of traditional and local alimentation culture. Eventually when these products are imported to the country, we demand that they should be identified with “etiquettes” which explain their “ingredients”. We think that it is the

fundamental right of the consumers to know which products contain GMO and to make their own choice.

4) We demand that the products of the companies which are known as using GMO, such as Nestle and the imported products of GMO producing companies such as Cargill, Novartis, Zeneca, Du-Pont, Syngenta, Monsanto ve Dow Chemical should be strictly controlled.

5) Relevant institutions of the Ministry of Health should control the GMO products, as 98% of them contain pesticides.

6) The groups such as farmer associations and agriculture chambers should consult to memorandums under the frame of struggle against the GMO products. This is the only way to create protected zones excluding all GMO intrusion, against a possible future GMO danger.

7) Especially environmentalist and ecologist organizations, NGOs, agriculture chambers, and consumer protection organizations should participate to the National Committee of Biosecurity.

8) The memorandums and opposition manifestations against the use of GMO seeds should not be limited to the ecologically fragile zones.

9) Agriculture products and seeds containing GMO are cheaper than traditional products in Turkey. These prices can be economically attractive to farmers and stock raisers. It is the duty of the State and the NGOs to ensure that public institutions, particularly at regional and local levels, should provide the necessary information against this deception.

10) National Biosecurity Coordination Committee's works will be terminated in March 2004. However, the project will most probably be prolonged. It has been estimated that it will take 4-5 years for the draft regulation, which is prepared according to these project, to be discussed by the relevant ministries (Agriculture, Forestry-Environment, Health, etc) and be offered to the Grand National Assembly to be put into force as a law. It is an urgent issue and this law has to be put into force as soon as possible. According to the obligation for each country to adopt their own control measures against the GMO products, the interdictions defined by the 11th and 12th articles of the Regulation of the Ministry of Agriculture and Rural Affairs, should stay valid and no regulation against these provisions should be made.

11) The Turkish Food Codex should define the GDO products and these products should be banned because of their harmful effects on human health.

12) The inventions, which will threaten human health, public order, environmental equilibrium, ecosystem, and biological diversity, should not be patented and the existing patents should be annulled.

13) Our current law, codes and regulations our customs services and laboratories are not ready yet for GMO products and seeds. It is necessary that these preparations be made as soon as possible.

14) The genetic resources of Turkey are one of our richest sources. The State and NGOs should institute official measures for the protection and durability of this resource and put into force laws to ensure such protection against the threat of multinational companies.